

Exponential Functions Review

- 1) The function $y = 187900 (1.025)^x$ represents the value of a home x years after purchase. How much is the home worth after 12 years?
- 2) The function $y = 290,000 (0.92)^x$ represents the value of an old home that has been abandoned by its owners x years ago. Find the rate of decay of the old home.
- 3) Use your knowledge of exponents to simplify:
- a. $x^3 \cdot x^5$ b. $\frac{x^{15}}{x^8}$ c. x^{-3} d. $\left(\frac{x^5}{x^4}\right)^2$
- 4) Use your knowledge of exponents to solve for x :
- a. $\sqrt{2x + 5} = 11$ b. $x^{\frac{2}{3}} = 36$ c. $\sqrt[3]{x - 2} = 3$ d. $3\sqrt{3x + 3} + 5 = 23$
- 5) A 100 milligram sample of Carbon-10 has a half-life of 19.29 seconds. Write an exponential function to model its decay. Let $x =$ **time in seconds** and $f(x) =$ the amount of Carbon-10 remaining in the sample. Calculate how much would remain after 54 seconds.
- 6) A popular antique is gaining value because it is so hard to find. In 1985 its value was \$125, and in 2000 its value was \$1925.90. The value increased 20% each year.
- a. Find an explicit exponential function to model the information – show your work.
- b. Write a recursive (NOW-NEXT) function to model the data.
- c. If the same trend continues, how much was the antique worth in 2010?
- 7) In a drop of pond water, there are 18 protozoa. Ten hours later, there are 180 protozoa in the dish. $P(t) = 18(10^{0.1t})$ provides an exponential growth model that matches these data points.
- a. Use the given function to estimate the amount of bacteria after 20 hours.

8) Use the table and equation below to describe the transformations of an exponential function.

$$y = a \cdot b^{x+c} + d$$

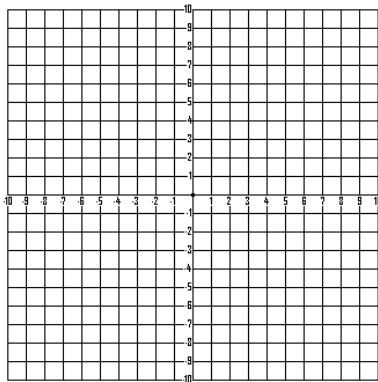
Describe the effect on the graph when...	List transformation in this column:
a is negative	
a is greater than one	
c is positive	
c is negative	
d is positive	
d is negative	

9) The following table gives some ordered pairs generated using the function $g(x)$. Create a table containing points from the inverse of $g(x)$.

x	$g(x)$
4	-7
1	-4
0	3
-2	12

x	$g^{-1}(x) \leftarrow$ Inverse of $g(x)$

10) Graph the equation $y = 3x - 1$ AND its inverse.



11) Find the equation of the inverse of the following functions:

a. $y = 15x - 1$

b. $y = \frac{4}{7}x$

c. $y = \frac{1}{3}x + 7$

d. $y = \sqrt{x + 3}$

12) Find the following

a) $\log_2 64$

b) $\log_3 81$

c) $\log 1000$

d) $\log 0.0001$